**April 4 Name:**

**Using Statistics in Human Movements**

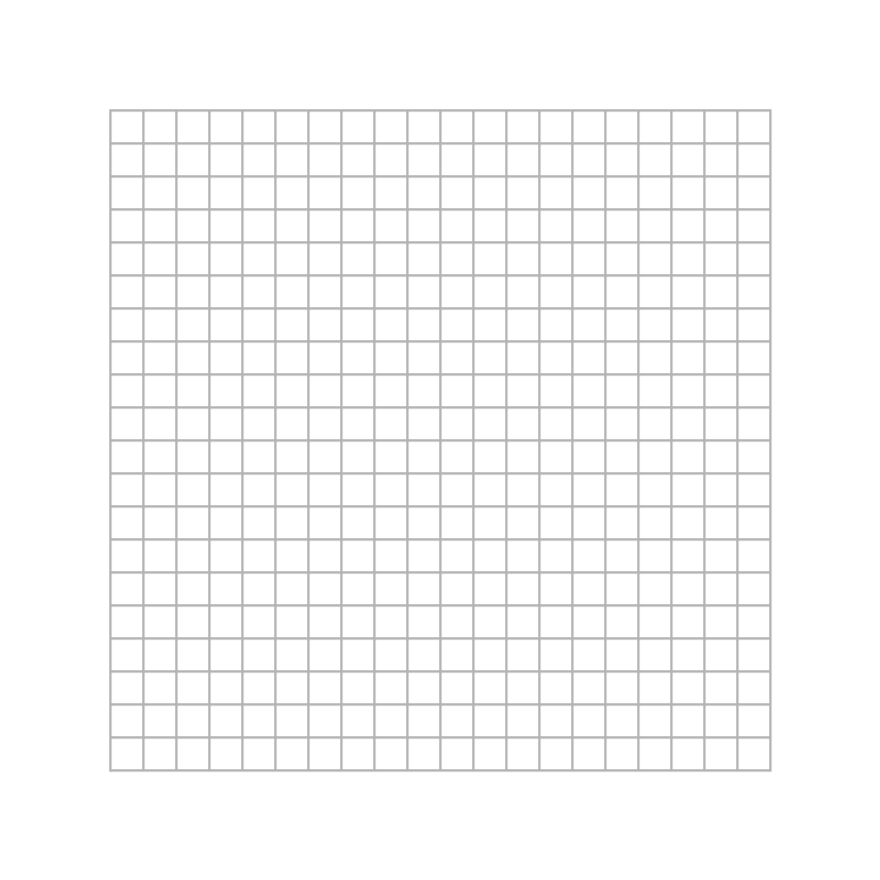
One measure of form for a runner is stride rate, defined as the number of steps per second. A runner is considered to be efficient if the stride rate is close to optimum. The stride rate is related to speed; the greater the speed, the greater the stride rate.

In a study of 21 top female runners, researchers measured the stride rate for different speeds. The following table gives the average stride rate of these women versus the speed.

(Data is from R.C. Nelson, C.M. Brooks, and N.L. Pike, “Biomechanical comparison of male and female runners”, in P. Milvy (ed.), The Marathon: Physiological, Medical, Epistemiological, and Psychological Studies, New York Academy of Sciences, 1977, pp. 793-807.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Speed | 15.86 | 16.88 | 17.50 | 18.62 | 19.97 | 21.06 | 22.11 |
| Stride Rate | 3.05 | 3.12 | 3.17 | 3.25 | 3.36 | 3.46 | 3.55 |

1. Plot the data. Decide if the data appears to be linear.



2. Find the equation of the regression line.

3. Make a prediction of the stride rate if the speed is 19 feet per second.

